

(No Model.)

3 Sheets—Sheet 1.

W. B. ROBERTS.

CULTIVATOR, GRAIN DRILL, AND HARROW.

No. 383,076.

Patented May 15, 1888.

Fig. 1.

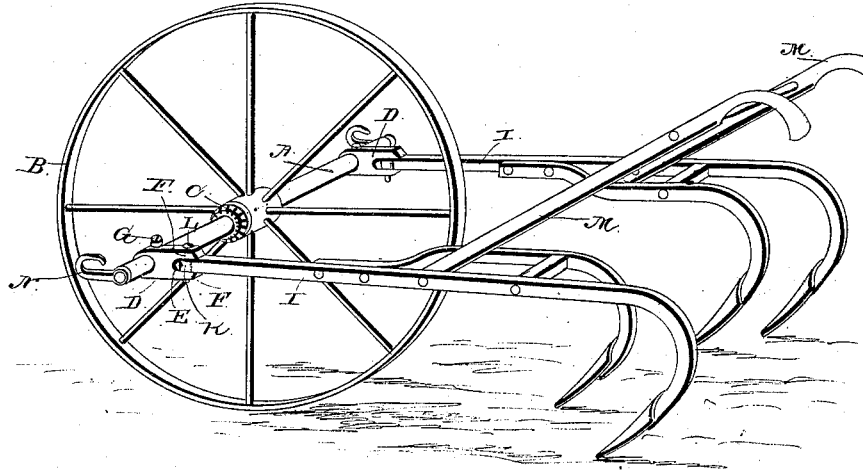


Fig. 2.

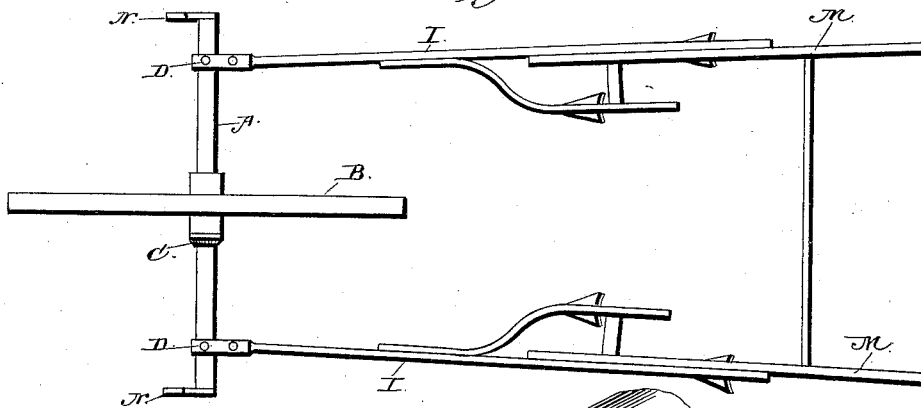
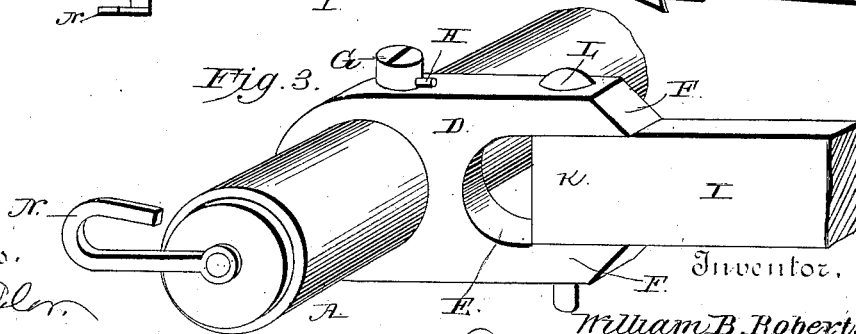


Fig. 3.



Witnesses.

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(No Model.)

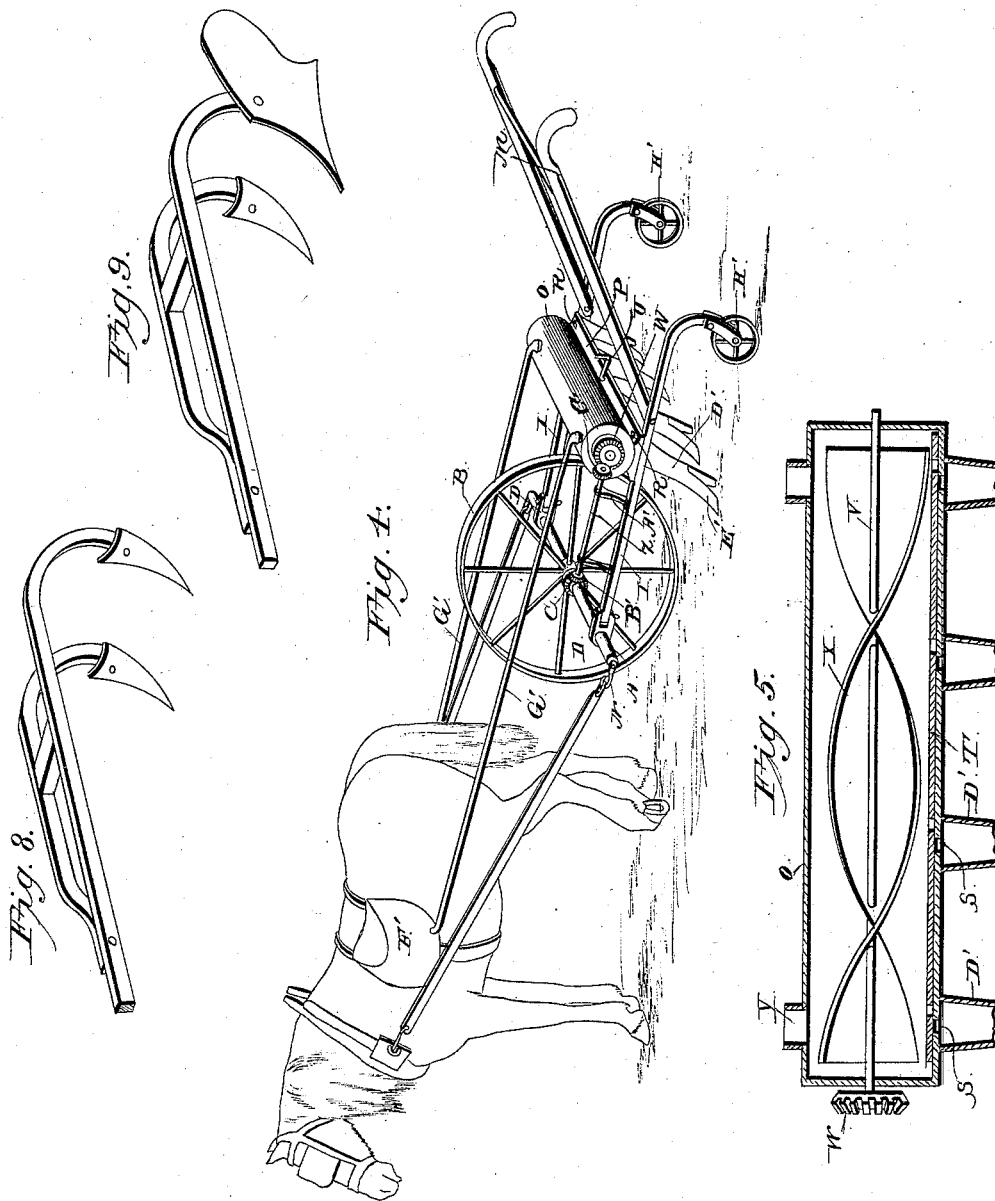
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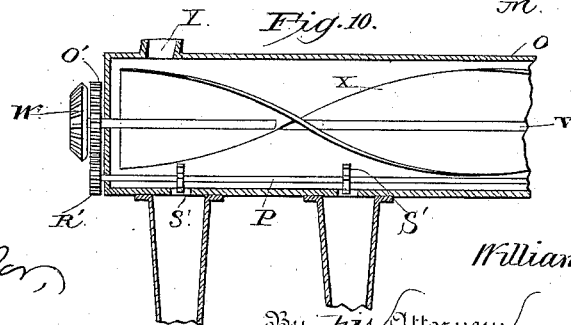
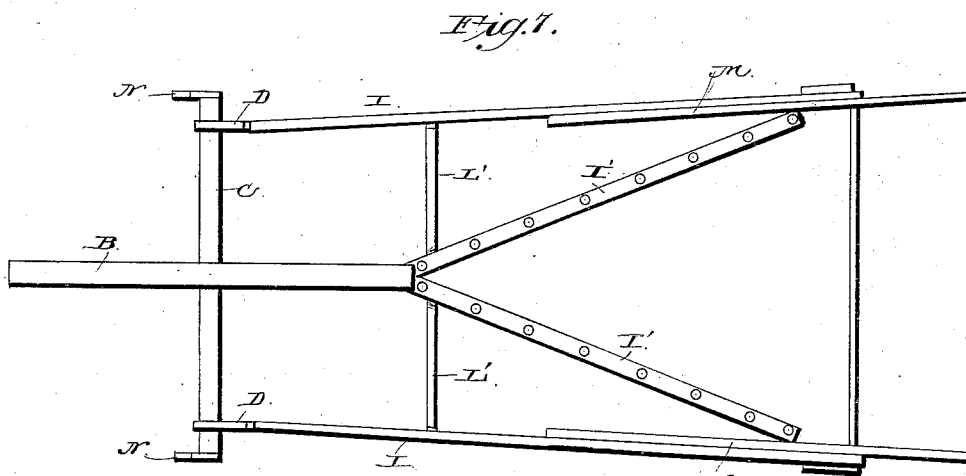
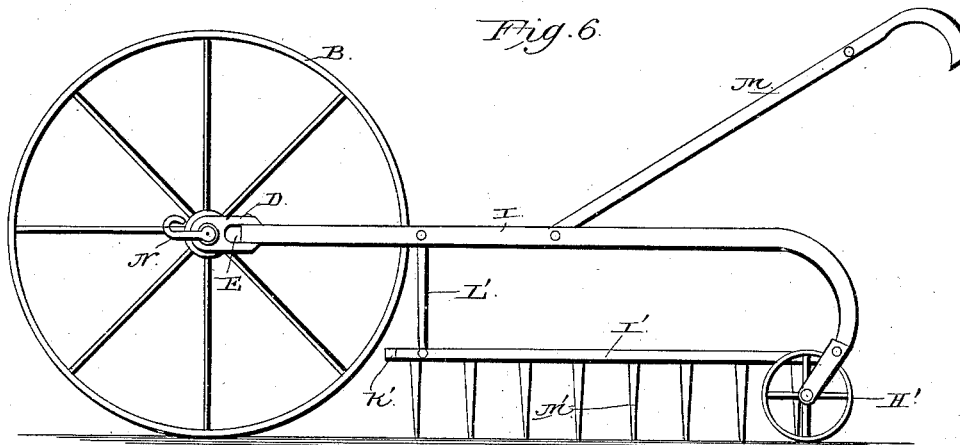
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# UNITED STATES PATENT OFFICE.

WILLIAM B. ROBERTS, OF SULLIVAN, INDIANA.

## CULTIVATOR, GRAIN-DRILL, AND HARROW.

SPECIFICATION forming part of Letters Patent No. 383,076, dated May 15, 1888.

Application filed July 30, 1887. Serial No. 245,681. (No model.)

### *To all whom it may concern:*

Be it known that I, WILLIAM B. ROBERTS, a citizen of the United States, residing at Sullivan, in the county of Sullivan and State of Indiana, have invented a new and useful Improvement in Interchangeable Cultivators, Grain-Drills, and Harrows, of which the following is a specification.

My invention relates to an improvement in interchangeable cultivators, grain-drills, and harrows; and it consists in the peculiar construction and combination of devices, that will be more fully set forth hereinafter, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a perspective view of my invention and adapted for use as a cultivator. Fig. 2 is a top plan view of the same. Fig. 3 is a detached perspective view showing the means employed to connect the cultivator-beams to the main axle. Fig. 4 is a perspective view of my invention when adapted for use as a one-horse seed-drill. Fig. 5 is a vertical transverse sectional view of the same. Fig. 6 is a side elevation of my invention when adapted for use as a harrow. Fig. 7 is a plan view of the part of the device shown in Fig. 6. Figs. 8 and 9 are detached perspective views showing different forms of cultivator attachments. Fig. 10 is a detailed sectional view.

A represents an axle, to the center of which is journaled a driving and supporting wheel, B. On one end of the hub of the wheel is secured a miter gear-wheel, C.

D represents a pair of clevises, which are attached to the axle A at suitable distances from the ends thereof and project rearwardly therefrom. The said clevises have openings E formed in their rear sides, and thereby provide rearward-extending arms F, which are arranged one above the other. Each clevis is rigidly secured to the axle by means of a set-screw, G, and the said screws are prevented from turning after being adjusted by means of keys H.

I represents a pair of cultivator-beams, which are provided with any suitable variety of plows or shovels. Each cultivator-beam has a vertical eye, K, at its front end. The front ends of the cultivator-beams are inserted in the openings E in the rear sides of the

clevises, and vertical bolts L are passed downward through aligned openings in the arms F and through the eye K, and serve thereby to pivot the front ends of the beams to the clevises, so that the cultivators are adapted to be moved laterally independently of each other. Each cultivator-beam is provided with a handle, M, adapted to be grasped by the plowman. To the ends of the axle are attached hooks N, adapted for the attachment of the traces of the draft animal. When thus arranged, my invention constitutes a cultivator, as shown in Figs. 1 and 2.

O represents a cylinder of suitable length and diameter, which is provided with a base-plate, P. The said base-plate is attached to the beams I by means of bolts R, and extends transversely from one beam to the other at a suitable distance from the front end of the beams. In the lower side of the cylinder is a series of openings, S, which are at regular distances apart.

T represents a slide, which is adapted to close or uncover the said openings at the will of the operator, and is provided with a rearward-extending arm or handle, U, which projects through and hooks in a slide in the rear side of the cylinder.

V represents a shaft which extends centrally through the cylinder, and is journaled in the heads thereof. To one end of this shaft is attached a miter gear-wheel, W.

X represents a worm conveyer, which is secured to the shaft, and extends longitudinally in the cylinder. The upper side of the latter is provided near its ends with openings Y.

Z represents a rod, which is journaled in suitable bearings, A', on one of the beams, and has at its front end a miter-pinion, B', that meshes with the wheel C, and a similar pinion, C', at its rear end, that meshes with the wheel W. By this means, as the machine advances, rotation of the driving-wheel will be imparted to the worm conveyer, as will be readily understood.

To the under side of the base-plate P is attached a series of depending seed conveyers or spouts, D', the lower ends of which are provided with the usual furrow-openers, E'.

F' represents a pair of sacks or receptacles, which are swung over the horse's back, and

are adapted to be filled with grain. Flexible tubes G' extend from the lower sides of these sacks or receptacles to the openings Y of the cylinder O and communicate with the latter, and are adapted to convey the grain from the sacks or receptacles to the cylinder, and thereby furnish a constant supply of grain to the cylinder when the machine is in motion, the movements of the horse serving to stir the seeds in the sacks or receptacles and feed them to the flexible tubes. When the machine is thus adapted for use as a grain-drill, the cultivating plows or shovels are removed from the beams I, and similar gage-wheels, H', are substituted therefor. When the machine is in motion and it is desired that it shall discontinue the drilling of the seeds, this may be accomplished by moving the slide T by the handle U, so as to cause the slide to cover the discharge-openings S in the bottom of the cylinder.

In Figs. 6 and 7 I illustrate my invention when adapted for use as a vibrating harrow, in which the grain-drilling apparatus hereinbefore described is entirely discarded. A pair of harrow-beams, I', have their rear ends attached to depending rear portions of the cultivator-beams, and their front ends connected together by means of a hinge, K', thereby adapting the beams of the harrow to vibrate laterally with the cultivator-beams.

L' represents stays or braces, which connect the front portions of the harrow-beams with the cultivator-beams, and thereby support the front end of the harrow. Harrow-teeth M', of any preferred construction, are attached to the beams.

Inasmuch as the beams I are pivotally connected to the axle A, and as the harrow-beams are flexibly connected to the beams I and are pivoted together, it follows that the harrow is rendered capable of lateral vibration or adjustment, and thereby the same is adapted to be narrowed or widened to correspond with the width of the space between the rows of plants to be cultivated thereby.

By increasing the length of the axle A and of the cylinder O and the worm conveyer therein, and by journaling supporting-wheels similar to supporting-wheels B near the ends of the extended axle, the grain-drill may be enlarged sufficiently to adapt the same to be drawn by two horses.

In Fig. 10 I illustrate my drill when provided with serrated or notched feeding devices. In this instance the worm conveyer shaft has a spur-wheel, O', on the inner side of the wheel W. Another shaft, P', is journaled in the cylinder below the conveyer, to the outer end of which is attached a spur-pinion, R', that meshes with wheel O'.

S' represents a series of serrated or notched feed disks or wheels, which are attached to the shaft P', and one of which is arranged

above each discharge-opening in the bottom of the cylinder.

When the machine is in operation, the rotation of the conveyer is communicated to the shaft P' and to the feed-disks, thereby causing the latter to force the seeds through the discharge-openings in the cylinder to the seed-spouts, as will be readily understood.

Having thus described my invention, I claim—

1. The combination of the axle having the hooks at the ends for the attachment of the traces, the wheel B, journaled to the center of the axle, the clevises attached to the axle near its ends and adjustable thereon, and the beams connected to the said clevises, substantially as described.

2. The combination of the axle, the wheel B, journaled thereon, the beams connected to the axle, the cylinder arranged transversely on the beams and having the discharge-openings and the spouts or conveyers depending therefrom, the worm conveyer journaled in the cylinder, and the gearing connecting the said conveyer to the wheel B, substantially as described.

3. The combination of the axle, the wheel B, journaled thereon, the beams connected to the axle, the cylinder arranged transversely on the beam and having the discharge-openings, the worm conveyer journaled in the cylinder, the gearing connecting the said conveyer to wheel B, the sack or receptacle adapted to be supported on the back of the draft-animal, and the flexible tubes connecting the said sack or receptacle with the cylinder, substantially as described.

4. The combination of the axle, the wheel B, journaled thereon and having the miter gear-wheel C, the beams connected to the axle, the cylinder arranged transversely on the beams, said cylinder having the discharge-openings, the worm conveyer journaled in the cylinder and having the miter-wheel W attached to one end of the shaft, the longitudinal rod Z, journaled in suitable bearings and having the miter-pinions meshing with the wheels C and W, for the purpose set forth, substantially as described.

5. The combination of the cylinder having the discharge-openings, the rotating worm conveyer arranged in the said cylinder, and the shaft P', having the feed disks or wheels S' arranged over the said openings and geared to the worm conveyer, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

WILLIAM B. ROBERTS.

Witnesses:

JOHN M. WILLS,  
JAMES M. GIFFORD.